BERTHS 26 TO 31

JEDDAH ISLAMIC PORT PROJECT

EVALUATION REPORT OF ANCHOR TEST

DOCUMENT NO: KASK-2023-U-SA-01-DE-REP-003-R00

00	06.11.2023	First Submission	Atalay Mert TURGUT	Serkan Yolacan	Şenol ADATEPE
Rev	**Date**	**Description**	**Prepared by**	**Checked by**	**Approved by**

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1 INTRODUCTION

The purpose of this report is to present results and the primary evaluations of anchor test performed within the scope of content of Development of the Port Platform (From 26 To 31) Project Jeddah Islamic Seaport (JIP), Jeddah – KSA.

Test anchor (TA-2) was executed in accordance with method statement "KASK-2023-U-SA-01-DE-MS-002-R00 " dated on 17.04.2023. This anchor was tested at 05.11.2023.

The details of the test anchors are summarized hereunder:

1) Test anchors were performed consisting of 10 number of [(2x 0.6") + (2x 0.6") + (2x 0.6")+ (2x 0.6") + (2x 0.6")] Dia.: 15.24 mm 7-wire strand. For 5-unit system, all anchor unit consists of 2 no of Dia.: 15.24 mm 7- wire strands.
2) Post grouting has been carried out in order to improve the surrounding soil around the fixed anchor bond length. Besides, the risk of grout washing away due to high water pressure shall also be eliminated and/or limited.

It should be noted that within the scope of this report, only test result of A150 is presented.

Table 1: Test Anchor Information

No	Technique	Strand	Free Length Length (m)	Drilling Diameter (mm)
A150	SBMA (Five bonded)	(2x 0.60")+(2x 0.60")+ (2x 0.60")+(2x 0.60")+(2x 0.60")	33.5 / 29.5 / 25.5 / 21.5 / 17.5	215

The location of all of test anchors are given in Figure 1 below.

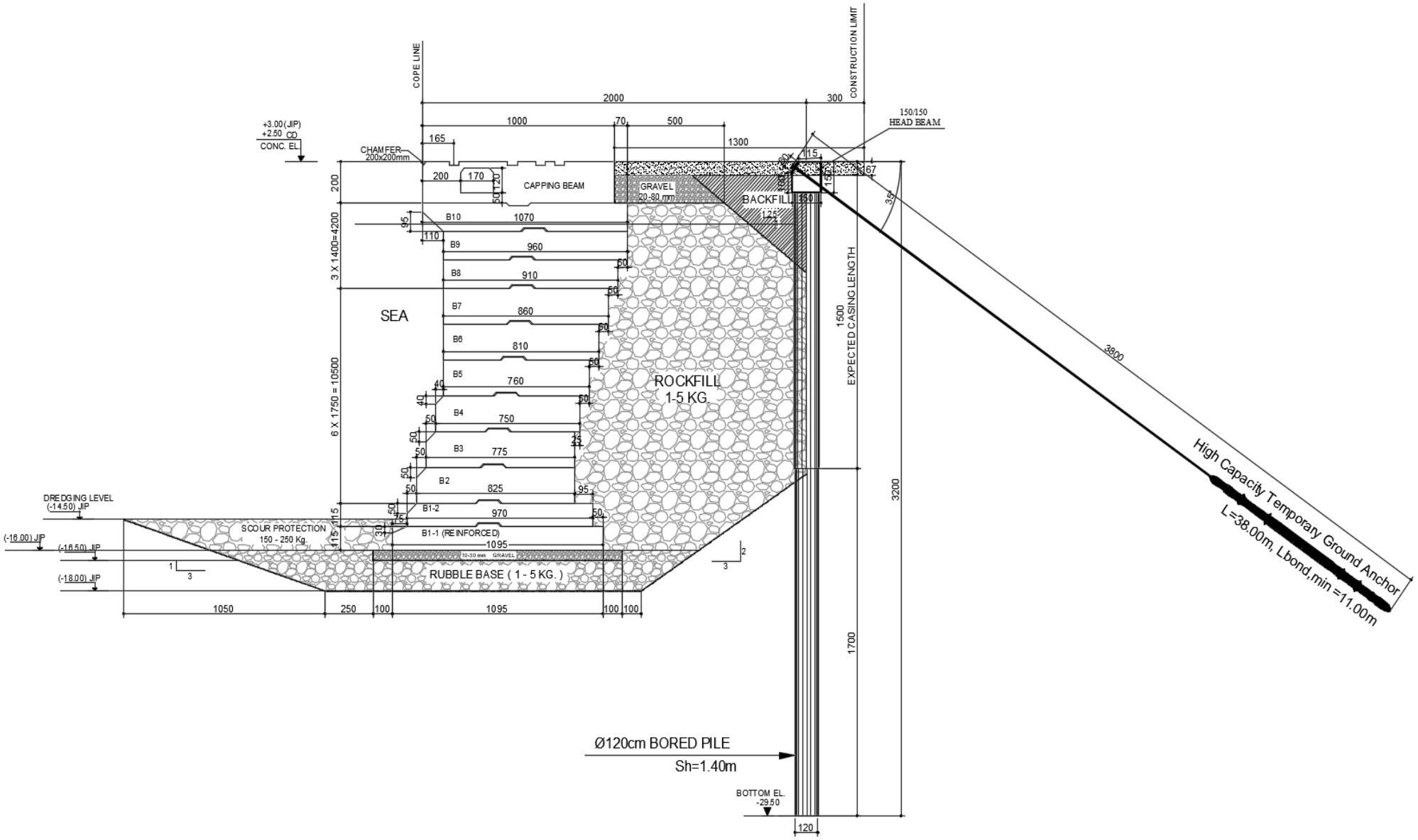


Figure 1: Section View of Test Anchor

2 TEST RESULTS

- **A150 :** Maximum Test load of 1,800 kN was achieved successfully. Elongations were observed to be within the allowable limits. Creep not observed.

3 EVALUATION AND RECOMMENDATIONS

As a result of 5-Bonded SBMA (Single Bore Multiple Anchor) Investigation Test, it is clearly seen that bond lengths and other designated parameters of anchors are satisfactory to carry the design loads successfully.

4 ATTACHMENTS

4.1 Attachment 1 :Site Readings and Evaluation of Results

4.2 Attachment 2 : Photos of Testing

4.3 Attachment 3 :Calibration Certificates

Attachment 1 : Site Readings and Evaluation of Results

KASKTAS ARABIA LTD.

SBMA - Investigation Test (Ref to: BS 8081)

		Anchor No	A150
Project:	**REHABILITATION OF BERTHS 26 TO 31 AT JEDDAH ISLAMIC PORT**	**Test Date**	5.11.2023
		Page	1 / 2

3.5 m Bond (2 Strands) + 3.5 m Bond (2 Strands) +3.5 m Bond (2 Strands)+3.5 m Bond (2 Strands)+3.5 m Bond (2 Strands)

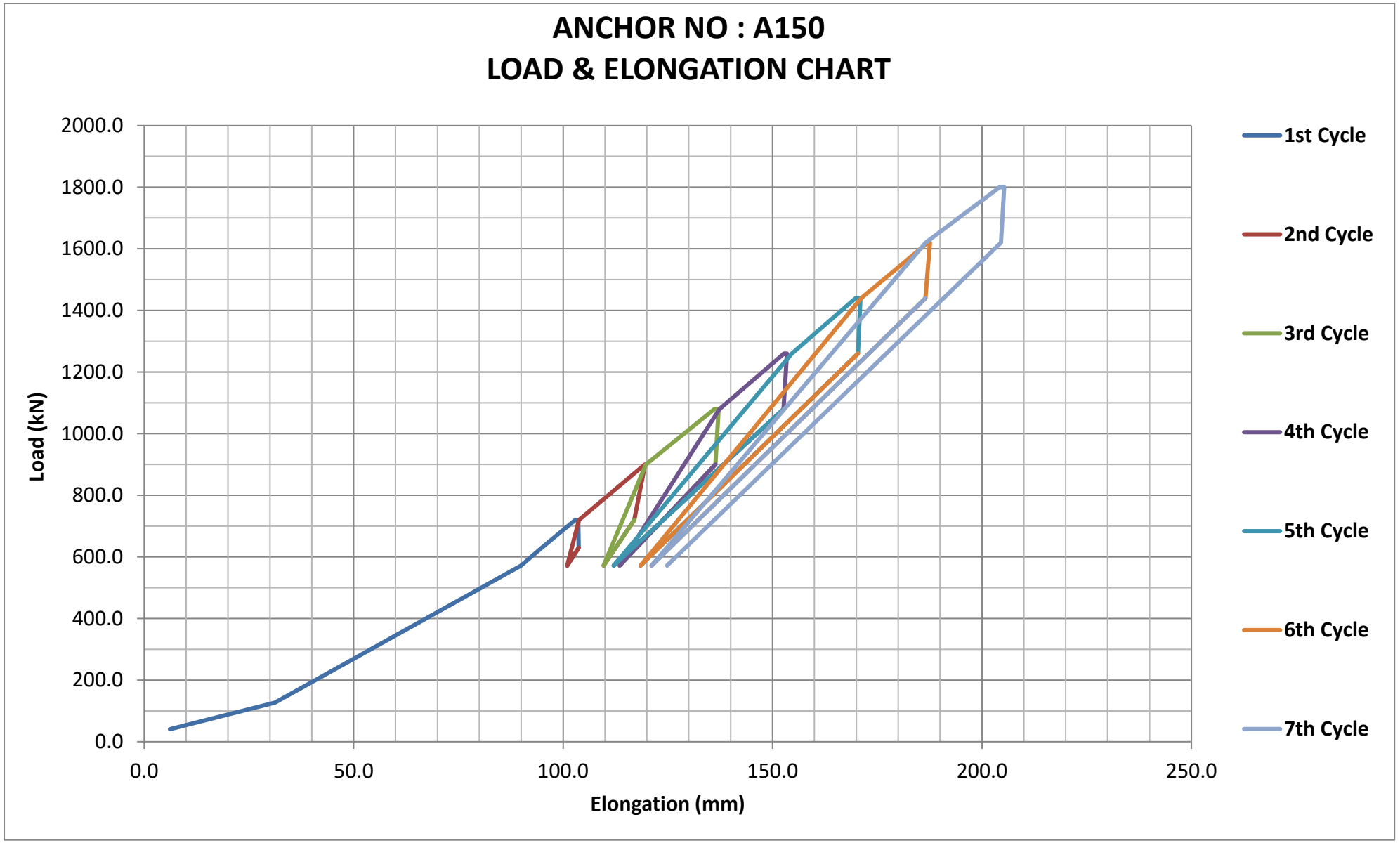
5 Unit

Anchor No	A150	Ex. Date	30.10.2023		
Anchıor Type	SBMA				
Anchor Detail	Unit-5	Unit-4	Unit-3	Unit-2	Unit-1
Tendon Number	2	2	2	2	2
Tendon Diameter (mm)	15.24	15.24	15.24	15.24	15.24
Tendon Area (mm²):	140.0	140.0	140.0	140.0	140.0
Free Length (m):	33.5	29.5	25.5	21.5	17.5
Average Stress Length (m):	2.0	2.0	2.0	2.0	2.0
Bond Length (m):	3.5	3.5	3.5	3.5	3.5
Creep Load / Failure Load (kN):				246	260
E-Modulus (kN/mm2):				200	
Tendon Steel Class (MPa)				1860	

Stressing Test Equipment	
Jack Type	SJM-27035
Piston/Ram Diameter (cm2):	384.8
	-
	-
Test Parametres:	
Failure Load, Ptk (kN)	2600
Design Load (kN)	1200
Maximum Test Load, Pp (kN)	1800
Cure time(day):	

Stage	Cycle	Pressure	Load	P/Pp	Anchor strecth (mm) Observation Time (min)												Creep Displacement (Δs), mm
		P (bar)	P (kN)	(%)	0	1	2	3	4	5	7	10	15	20	30	45	60	mm
Pre-1	Pre	11	40.6	2%	6.14	Unit-1 Stress, Unit-2 Wedge Activate												
Pre-2		34	126.8	7%	31.20	Unit 1 and 2 Stress, Unit-3 Wedge Activate												
Pre-3		70	265.5	15%	56.73	Unit 1, 2 and 3 Stress, Unit-4 Wedge Activate												
Pre-4		122	465.4	26%	79.88	Unit 1, 2, 3 and 4 Stress, Unit-5 Wedge Activate												
Pre-5		150	571.9	32%	89.93	Datum Load												
1	1	165	630.0	35%	94.90	95.22												
2		188	720.0	40%	102.94	103.47	103.57	103.62	103.62	103.75	103.75	103.75	103.75					0.19
3		165	630.0	35%	103.72	103.72												
4		150	571.9	32%	100.98	100.98												
5	2	188	720.0	40%	103.80	103.90												
6		234	900.0	50%	119.49	119.50	119.57	119.57	119.57	119.57	119.58	119.76	119.76					0.27
7		188	720.0	40%	116.96	116.96												
8		150	571.9	32%	109.66	109.66												
9	3	234	900.0	50%	119.79	119.91												
10		281	1080.0	60%	136.13	136.70	136.86	136.94	137.13	137.13	137.13	137.13	137.14					0.29
11		234	900.0	50%	136.38	136.38												
12		150	571.9	32%	113.49	113.49												
13	4	281	1080.0	60%	137.31	137.54												
14		327	1260.0	70%	152.75	153.19	153.34	153.44	153.44	153.44	153.72	153.72	153.72					0.40
15		281	1080.0	60%	152.61	152.47												
16		150	571.9	32%	112.07	112.07												
17	5	327	1260.0	70%	154.60	154.77												
18		373	1440.0	80%	169.87	170.52	170.75	170.75	170.99	170.99	170.99	170.99	170.99					0.34
19		327	1260.0	70%	170.37	170.37												
20		150	571.9	32%	118.50	118.50												
21	6	373	1440.0	80%	171.13	171.27												
22		419	1620.0	90%	187.11	187.50	187.50	187.54	187.56	187.58	187.58	187.61	187.61					0.10
23		373	1440.0	80%	186.49	186.49												
24		150	571.9	32%	121.13	121.13												
25	7	419	1620.0	90%	186.57	186.88												
26		466	1800.0	100%	204.19	204.82	204.85	204.96	205.05	205.19	205.31	205.42	205.65					0.99
27		419	1620.0	90%	204.51	204.51												
28		150	571.9	32%	124.84	124.84												
29	Lock-off (1.1xDesign Load)	150	571.9	32%	124.84	124.84												
30		342	1320.0	110%	166.24	166.24	166.24	166.24	166.24	166.24	166.24	166.24	166.24					

Note: Creep check will be observed for at least 15 min at the max load at each cycle. After 15 min, if creep value is over 2 mm, readings will continue until creep value drops below 2 mm. After 60 min, is creep value is over 3 mm, next steps will be taken to determine the anchor peel load.


ANCHOR NO : A150
LOAD & ELONGATION CHART
Load (kN)
2000.0
1800.0
1600.0
1400.0
1200.0
1000.0
800.0
600.0
400.0
200.0
0.0
0.0
50.0
100.0
150.0
200.0
250.0
Elongation (mm)
1st Cycle
2nd Cycle
3rd Cycle
4th Cycle
5th Cycle
6th Cycle
7th Cycle

ANCHOR NO: A150

APPARENT FREE LENGTH CALCULATIONS

Test Load (kN)						Free Length (m)					Site Elongation (mm)					
Unit 5	Unit 4	Unit 3	Unit 2	Unit 1	Total	Unit 5	Unit 4	Unit 3	Unit 2	Unit 1	Total	Unit 5	Unit 4	Unit 3	Unit 2	Unit 1
178	155	125	85	29	**572**	33.5	29.5	25.5	21.5	17.5	89.93	89.93	64.22	38.50	12.79	-12.93
200	180	153	118	69	**720**	33.5	29.5	25.5	21.5	17.5	103.75	103.75	78.04	52.32	26.61	0.89
227	210	188	159	117	**900**	33.5	29.5	25.5	21.5	17.5	119.76	119.76	94.05	68.33	42.62	16.90
253	240	222	199	166	**1080**	33.5	29.5	25.5	21.5	17.5	137.13	137.13	111.42	85.70	59.99	34.27
280	270	257	239	214	**1260**	33.5	29.5	25.5	21.5	17.5	153.72	153.72	128.01	102.29	76.58	50.86
307	300	291	279	263	**1440**	33.5	29.5	25.5	21.5	17.5	170.99	170.99	145.28	119.56	93.85	68.13
333	330	326	320	311	**1620**	33.5	29.5	25.5	21.5	17.5	187.61	187.61	161.90	136.18	110.47	84.75
360	360	360	360	360	**1800**	33.5	29.5	25.5	21.5	17.5	205.65	205.65	179.94	154.22	128.51	102.79

Apparent Free Length (m)					Allowable Free Length (m)				
Unit 5	Unit 4	Unit 3	Unit 2	Unit 1	Unit 5	Unit 4	Unit 3	Unit 2	Unit 1
35.61	31.60	27.59	23.57	19.56	Min:	Min:	Min:	Min:	Min:
					28.80	25.60	22.40	19.20	16.00
					Max:	Max:	Max:	Max:	Max:
					37.25	33.25	29.25	25.25	21.25

Apparent Free Length is calculated as follows;

$$\text{Apparent tendon free length} = \frac{A_t E_s \Delta_t}{\Delta P}$$

Where $\Delta_t = \Delta_e - \Delta_a$ and $\Delta P = P_p - P_a$

E_s Young's modulus of tendon unit

A_t cross-sectional area of tendon

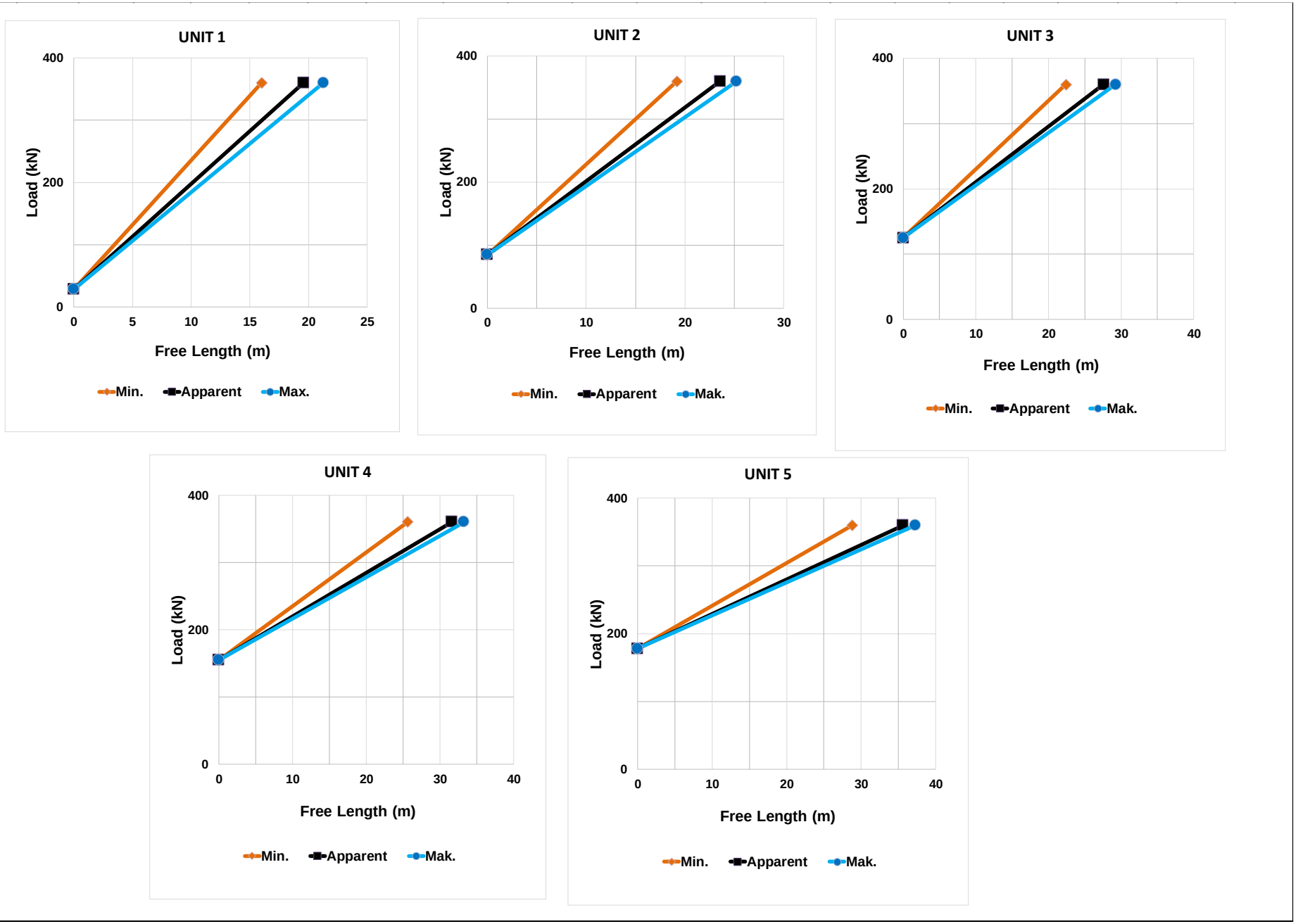
Δ_a elastic displacement of tendon at datum load

Δ_e elastic displacement of tendon at proof load

To find apparent free length; value of length calculated above formula is subtracted with stressing length

ΔP = Step Max. Load - Datum Load

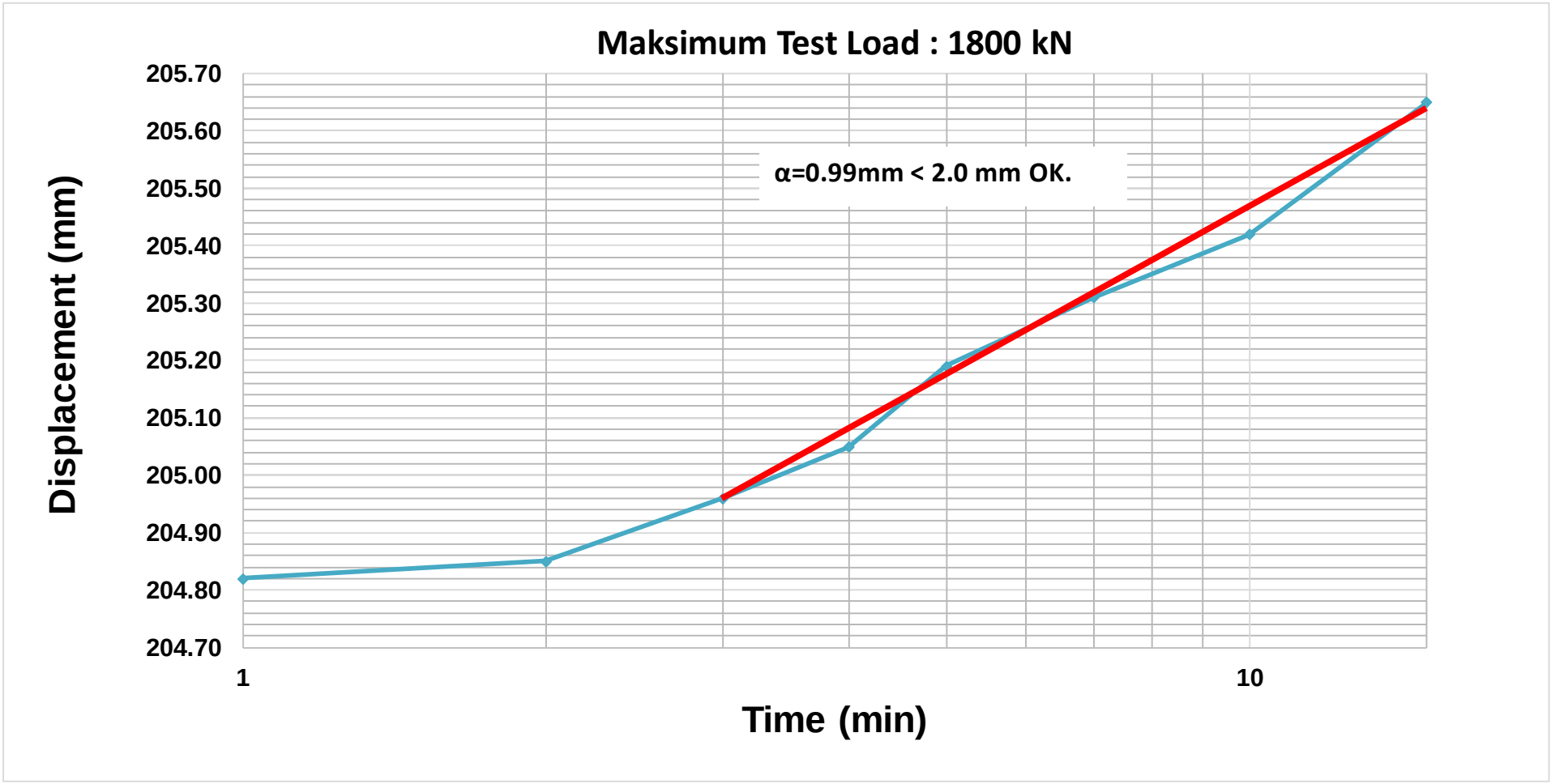
Min.criteia is defined based on BS8081:2015


UNIT 1
Load (kN)
400
200
0
0
5
10
15
20
25
Free Length (m)
Min.
Apparent
Max.
UNIT 2
Load (kN)
400
200
0
0
10
20
30
Free Length (m)
Min.
Apparent
Mak.
UNIT 3
Load (kN)
400
200
0
0
10
20
30
40
Free Length (m)
Min.
Apparent
Mak.
UNIT 4
Load (kN)
400
200
0
0
10
20
30
40
Free Length (m)
Min.
Apparent
Mak.
UNIT 5
Load (kN)
400
200
0
0
10
20
30
40
Free Length (m)
Min.
Apparent
Mak.

ANCHOR NO: A150

Evaluation of Creep Ratio According to BS 8081

Observation Time: 15 min



Attachment 2: Photos of Testing

Anchor No : A150

Attachment 3: Calibration Certificates

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Calibration Certificate

Test Table

Cylinder Serial Number : 23S-068-2305130

Certificate Number

HM1000-107921

Calibration Test Result

Pressure - bar -	Load - ton-
50	18,50
75	28,75
100	39,00
125	48,25
150	57,50
175	67,25
200	77,00
225	87,25
250	97,50
275	106,75
300	116,00
325	125,25
350	134,50
375	144,25
400	154,00
425	164,25
450	174,50
475	184,25
500	194,00
525	203,25
550	212,50
575	222,25
600	232,00
625	241,75
650	251,50
675	261,25
700	271,00

Temparature of the test place : 21°

Calibrated by:
Özkan YAĞCI
Technician

Approval
Murat DEMİRTAŞ
Quality Management Manager

hidro - mekanik

Calibration Certificate

DSR CERTIFICATION
ISO 9001:2015 CERTIFIED

Certificate Number
HM1000-107921

Manufacturer	:	HİDROMEKANİK HİDROLİK MAKİNA SAN.TİC.LTD.ŞTİ. *Oto San.Sit.Aytekin Sk. No:28 34418 4.Levent İstanbul / TURKEY*
Customer	:	KASKTAŞ A.Ş.
Device	:	*Double acting multi strand stressing jack*
Cylinder Model Number	:	*SJM-27035*
Cylinder Serial Number	:	*23S-068-2305130*
Cylinder effective area	:	*384,80 cm²*
Date of Calibration	:	*25/05/2023*
Test Mode	:	*Compression*
Test Place	:	*HİDROMEKANİK Workshop*

Load Cell Manufacturer	:	Strainstall Strainstall UK Ltd
Load Cell Certificate Number	:	XD46/134321

hidromekanik.net
strainstall.com
ni.com
wika.de
prelectronics.com
intel.com/go/integration
gigabyte.com.tw
ni.com/patents

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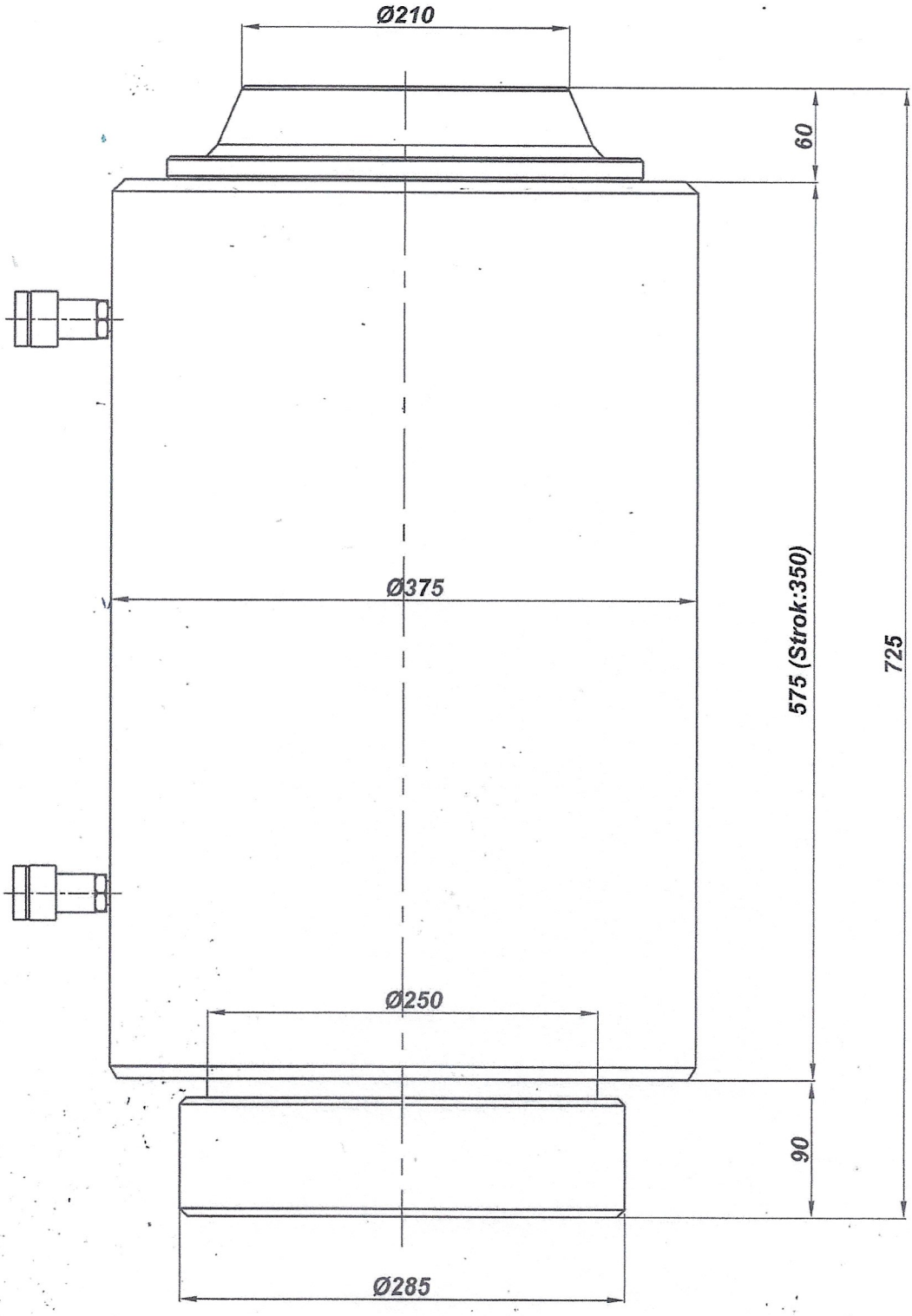
SJM - 27035 (270 Ton Capacity)
Multi Strand Stressing Jack (10 strand)
Data Sheet



DATA SHEET	
item	**data**
Product	Hydraulic multi strand stressing jack
Type	Double acting, hydraulic return
Model no	**SJM-27035**
Capacity	**270 ton**
Number of stressing strand	**0,6" x 10 strand**
Strok	**350 mm**
Closed height	725 mm
Cylinder outside diameter	375 mm
Center hole diameter	163 mm
Rod diameter	250 mm
Cylinder inside diameter	295 mm
Cylinder effective area	**384,80 cm2**
Oil capacity	13.470 cm3
Cylinder ports	3/8" NPT
Working pressure (maximum)	**700 bar**
Test pressure	800 bar
Weight	435 kg

ADAPTOR LIST	
Complate pipe adaptor	0,6" x 10 strand
Stressing plate group	0,6" x 10 strand

FUGRO-SUHAIMI CO. LTD.
Calibration Department
P.O. Box 31720 – Yanbu – Saudi Arabia
Tel. : (014) 396 2173
Fax. : (014) 321 0963
E-mail : fslyanbu@fugro-suhaimi.com

Instrument & Certificate Transmittal

CLIENT:	KASKTAS Arabia Co	**PROJECT No.**	SA17-9061
ADDRESS	Jeddah, Saudi Arabia	**DATE:**	23 October 2023

The following equipments/instruments have been delivered to our client after calibration along with calibration certificates.

Sr. No.	Description:	FSL Lab No.	Qty.
1	Calibration of Pressure Gauge	SA17-9061-12110	01

Remarks:

Delivered by:

Name:	Sajith Paichadthil
Signature:	
Date	23 October 2023

Received the above item in good condition:

Received by Name:	
Signature:	
Date	

FUGRO-SUHAIMI CO. LTD.
Lot # 012, Block # 03, P.O. Box. 31720
Haii Al-Mehan, Shareh Nahawand
Royal Commission, Madinat Yanbu Al-Sinaiyah, KSA
Saudi Arabia – E-mail : fslyanbu@fugro-suhaimi.com
Fax. : (014) 321 0963 Tel. :(014) 396 2173

ACCREDITED
Certificate # 3512.10

السحيمي - فيغرو
FUGRO - Suhaimi

CERTIFICATE No.: SA17-9061-12110

CALIBRATION CERTIFICATE OF PRESSURE GAUGE

CLIENT: KASKTAS Arabia Co.

PROJECT No.: SA17-9061

ADDRESS: Jeddah, Saudi Arabia

DATE: 23 October 2023

CONTACT No: 058 377 5323

This is to certify that the equipment described below has been calibrated by Fugro-Suhaimi Co. Ltd.

This certificate applies only to the equipment specified in this certificate.

No statement of compliance with the specification is made or implied on this report. However, the results are reviewed to establish where any measurement result exceed the manufacturer's specification and communicate result by means of report.

Details of Device under Calibration (DUC)

(Information supplied by the client)

Description:	**PRESSURE GAUGE**
Manufacturer:	Hi Force
Model No.:	EN 837-1
Serial / Identification No.:	5430882154 / P2 - 117
Calibration Range:	0 to 700 Bar
Resolution / Accuracy:	20 Bar
Specification Limit:	As per ASME B40.1 Grade B (± 2% of FS for dial type gauges)

Calibration Details:

Date of Receipt of Instrument:	22 October 2023
Calibration Date:	22 October 2023
Next Calibration Due Date:	22 April 2024
Location of Calibration:	FSCL, Jeddah

Calibrated by:

FSL-W.P. 4 TECH

Mustafa Kamal
Calibration Lab. Supervisor

Reviewed by:

Sajith Paichadathil
Asst. Lab. Manager. Yanbu

Approved by:

Syed Athar Ali
Manager Cal. Lab. Yanbu

23 October 2023
Date

السحيمي - فيغرو
FUGRO - Suhaimi
Calibration Division
Yanbu Calibration Lab
C.R. 20500044110 س.ت
ختم صالح فقط لتقارير المختبر
Stamp Valid For Lab Documents Only

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Saudi Arabia – E-mail : fslyanbu@fugro-suhaimi.com
Fax. : (014) 321 0963 Tel. :(014) 396 2173

ACCREDITED
Certificate # 3512.10

السحيمي - فيغرو
FUGRO - Suhaimi

CERTIFICATE No.: SA17-9061-12110

RESULTS OF CALIBRATION OF PRESSURE GAUGE

Calibration Procedure:

Calibration Procedure:	FSL CP E 01
Reference Standard:	SSA 177

Calibration Data:

Device under Calibration (Bar)	Average Applied Pressure (Bar)	Tolerance	
		Lower Limit	Upper Limit
0	0	0.0	0.0
100	100	98.0	102.0
300	300	294.0	306.0
500	500	490.0	510.0
700	700	686.0	714.0
500	500	490.0	510.0
300	300	294.0	306.0
100	100	98.0	102.0
0	0	0.0	0.0

Measurement Uncertainty: The expanded uncertainty of the above measurement is estimated. not to exceed **± 11.25 Bar,** based on Type A and B Standard uncertainties multiplied by a coverage factor k=2, providing a level of confidence of approximately 95%.

Test Conditions:

Ambient Temperature:	24 °C
Relative Humidity:	48 %

Details of Reference Device:

Reference Device (Description)	Dead Weight Tester
Manufacturer	BUDENBERG
Serial / Identification Number:	580/29974 / FSL ID # 84-110
Next Calibration Due:	30 November 2023
Calibration Traceability:	Traceable to International Standards Reports No. 2021011488

FSL-W.P. 4 TECH

Calibration Lab. Supervisor: _____

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Calibration Division
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CERTIFICATE OF INSPECTION / 検査成績書

発行No. / Issue No. : 4510144485

Product name / 品名	Digimatic Caliper / ﾃﾞｼﾞﾏﾁｯｸｷｬﾘﾊﾟ
Model / 符号	CD-12"AX
Code No. / コードNo.	500-173-30
Serial No. / 製造No.	0056697
Measuring range / 測定範囲	0-300mm / 0-12in
Resolution / 最小表示量	0.01mm / 0.0005in
Reference temperature / 標準温度	20℃
QC Manager T.Shinohara	T. Shinohara

Inspection standard : Mitutoyo standard

Based on : ISO13385-1 (ASME B89 , JIS B 7507)
Reference standard for inspection is traceable to NMIJ AIST through JCSS which is equivalent to NIST and PTB traceability by CIPM MRA.

この検査成績書には安心してご利用いただけますよう出荷時の検査データを記載していますが、
校正証明書取得用にはご利用できません。

Mitutoyo Corporation

(1) Result of inspection / 検査結果

Measured length 測定長		Maximum permissible error 最大許容誤差(MPE)	Error of indication / 指示誤差 Outside / 外側	Inside / 内側
Unit : mm 単位 : mm	φ5	±0.04	---	-0.03
	0	±0.02	0.00	---
	50		-0.01	-0.01
	100		-0.01	-0.02
	150		-0.01	-0.02
	200		-0.01	-0.02
	300	±0.03	-0.01	-0.02
Unit : in 単位 : in	φ0.2	±0.0020	---	-0.0015
	0	±0.0010	0.0000	---
	2		-0.0005	-0.0005
	4		-0.0005	-0.0010
	6		-0.0005	-0.0010
	8		-0.0005	-0.0010
	12	±0.0015	-0.0005	-0.0010

(2) Judgment / 判定 : Passed / 合格

U0049-00223(12)

CERTIFICATE OF INSPECTION / 検査成績書

発行No. / Issue No. : 4505467198

Product name / 品名	Digimatic Caliper / ﾃﾞｼﾞﾏﾁｯｸｷｬﾘﾊﾟ
Model / 符号	CD-12"AX
Code No. / コードNo.	500-173-30
Serial No. / 製造No.	0054416
Measuring range / 測定範囲	0-300mm / 0-12in
Resolution / 最小表示量	0.01mm / 0.0005in
Reference temperature / 標準温度	20℃
QC Manager T.Shinohara	T. Shinohara

Inspection standard : Mitutoyo standard

Based on : ISO13385-1 , ASME B89 , JIS B 7507

Reference standard for inspection is traceable to NMIJ AIST through JCSS which is equivalent to NIST and PTB traceability by CIPM MRA.

この検査成績書には安心してご利用いただけますよう出荷時の検査データを記載していますが、
校正証明書取得用にはご利用できません。

Mitutoyo Corporation

(1) Result of inspection / 検査結果

Measured length 測定長		Maximum permissible error 最大許容誤差(MPE)	Error of indication / 指示誤差	
			Outside / 外側	Inside / 内側
Unit : mm 単位 : mm	φ5	±0.04	---	-0.03
	0	±0.02	0.00	---
	50		+0.01	-0.02
	100		+0.01	-0.01
	150		+0.01	-0.01
	200		0.00	-0.02
	300	±0.03	+0.01	-0.03
Unit : in 単位 : in	φ0.2	±0.0020	---	-0.0015
	0	±0.0010	0.0000	---
	2		+0.0005	-0.0010
	4		+0.0005	-0.0005
	6		+0.0005	-0.0005
	8		0.0000	-0.0010
	12	±0.0015	+0.0005	-0.0015

(2) Judgment / 判定 : Passed / 合格

U0049-00223(11)

Inspection Certificate

Product name	Digital Caliper	Traceable to	USA NIST No.821/279484-10
Code No.	1108-300		Germany DKD No.D-K-15190-01-00
Measuring range	0-300mm / 0-12"	Inspector	Daniel
Resolution	0.01mm / .0005"		
Serial No.	2502221204	Judgement	Passed
Standard temperature	20 °C / 68 °F		

Unit: inch

Measuring Length	Permissible Error	Error	
		External	Internal
.4 DIA	+.0005 -.0010	/	-.0005
2	±.0010	.0000	/
4		.0000	/
6	±.0015	.0005	/
8		.0005	/
10		.0005	/
12		.0010	/

Unit: mm

Measuring Length	Permissible Error	Error	
		External	Internal
Φ10	+0.01 -0.02	/	-0.01
50	±0.02	0.00	/
100		0.00	/
150	±0.03	0.01	/
200		0.01	/
250		0.01	/
300		0.02	/

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Certificate # 3512.10

السحيمي - فيغرو
FUGRO - Suhaimi

CERTIFICATE No.: SA17-9061-11997

CALIBRATION CERTIFICATE OF DIAL GAUGE

CLIENT: KASKTAS Arabia Co.

PROJECT No.: SA17-9061

ADDRESS: Jeddah, Saudi Arabia

DATE: 05 October 2023

CONTACT NO: 055 634 4475

This is to certify that the equipment described below has been calibrated by Fugro-Suhaimi Co. Ltd.

This certificate applies only to the equipment specified in this certificate.

No statement of compliance with the specification is made or implied on this report. However, the results are reviewed to establish where any measurement result exceed the manufacturer's specification and communicate result by means of report.

Details of Device under Calibration (DUC)

(Information supplied by the client)

Description:	**DIAL GAUGE**
Manufacturer:	MITUTOYO
Model No.:	3058S-19
Serial / Identification No.:	FFC 926
Capacity / Range:	0 ~ 50 mm
Resolution / Accuracy:	0.01 mm
Specification:	As per BS 907 (± 0.02 mm / 0.001 Inch)

Calibration Details:

Date of Receipt of Instrument:	28 September 2023
Calibration Date:	30 September 2023
Next Calibration Due Date:	30 March 2024
Location of Calibration:	At FSL Laboratory, Jeddah

Calibrated by:

FSL-W.P 4 TECH

Mustafa Kamal
Calibration Lab. Supervisor

05 October 2023
Date

Reviewed by:

For

Irshad Ahmed
Calibration Engineer

Approved by:

Sajith Paichadathil
Asst. Lab. Manager. Yanbu

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FUGRO - Suhaimi
Calibration Division
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CERTIFICATE No.: SA17-9061-11997

RESULTS OF CALIBRATION OF DIAL GAUGE

Calibration Procedure:

Calibration Procedure:	FSL CP A 05
Reference Standard:	BS 907

Calibration Data:

Reference Standard Reading (mm)	Average Test Instruments Reading (DUC) (mm)	Difference
0	0.00	0.00
10	10.00	0.00
20	20.00	0.00
30	30.00	0.00
40	40.00	0.00
50	50.00	0.00
40	40.00	0.00
30	30.00	0.00
20	20.00	0.00
10	10.00	0.00
0	0.00	0.00

Measurement Uncertainty: The expanded uncertainty of the above measurement is estimated not to exceed **± 8.93 µm**, based on Type A and B Standard uncertainties multiplied by a coverage factor k=2, providing a level of confidence of approximately 95%.

Test Conditions:

Ambient Temperature:	24 °C
Relative Humidity:	58%

Details of Reference Device:

Reference Device (Description)	Standard Gauge Block
Manufacturer	Kudale Instruments.
Serial / Identification Number:	1202109 / FSL ID # 84-181
Next Calibration Due:	04 March 2025
Calibration Traceability:	Traceable to International Standards Report No: 2023001369

Calibration Lab. Supervisor: _____

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CERTIFICATE No.: SA17-9061-11998

CALIBRATION CERTIFICATE OF DIAL GAUGE

CLIENT: KASKTAS Arabia Co.

PROJECT No.: SA17-9061

ADDRESS: Jeddah, Saudi Arabia

DATE: 05 October 2023

CONTACT NO: 055 634 4475

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Details of Device under Calibration (DUC)

(Information supplied by the client)

Description:	**DIAL GAUGE**
Manufacturer:	MITUTOYO
Model No.:	3058S-19
Serial / Identification No.:	FFC 953
Capacity / Range:	0 ~ 50 mm
Resolution / Accuracy:	0.01 mm
Specification:	As per BS 907 (± 0.02 mm / 0.001 Inch)

Calibration Details:

Date of Receipt of Instrument:	28 September 2023
Calibration Date:	30 September 2023
Next Calibration Due Date:	30 March 2024
Location of Calibration:	At FSL Laboratory, Jeddah

Calibrated by:

FSL-W.P 4 TECH

Mustafa Kamal
Calibration Lab. Supervisor

05 October 2023
Date

Reviewed by:

For

Irshad Ahmed
Calibration Engineer

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Calibration Division
Yanbu Calibration Lab
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Approved by:

Sajith Paichadathil
Asst. Lab. Manager. Yanbu

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CERTIFICATE No.: SA17-9061-11998

RESULTS OF CALIBRATION OF DIAL GAUGE

Calibration Procedure:

Calibration Procedure:	FSL CP A 05
Reference Standard:	BS 907

Calibration Data:

Reference Standard Reading (mm)	Average Test Instruments Reading (DUC) (mm)	Difference
0	0.00	0.00
10	10.00	0.00
20	20.00	0.00
30	30.00	0.00
40	39.99	0.01
50	49.99	0.01
40	39.99	0.01
30	30.00	0.00
20	20.00	0.00
10	10.00	0.00
0	0.00	0.00

Measurement Uncertainty: The expanded uncertainty of the above measurement is estimated not to exceed **± 8.93 µm**, based on Type A and B Standard uncertainties multiplied by a coverage factor k=2, providing a level of confidence of approximately 95%.

Test Conditions:

Ambient Temperature:	24 °C
Relative Humidity:	58%

Details of Reference Device:

Reference Device (Description)	Standard Gauge Block
Manufacturer	Kudale Instruments.
Serial / Identification Number:	1202109 / FSL ID # 84-181
Next Calibration Due:	04 March 2025
Calibration Traceability:	Traceable to International Standards Report No: 2023001369

Calibration Lab. Supervisor: _____

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CERTIFICATE No.: SA17-9061-11999

CALIBRATION CERTIFICATE OF DIAL GAUGE

CLIENT: KASKTAS Arabia Co. **PROJECT No.:** SA17-9061

ADDRESS: Jeddah, Saudi Arabia **DATE:** 05 October 2023

CONTACT NO: 055 634 4475

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Details of Device under Calibration (DUC)

(Information supplied by the client)

Description:	**DIAL GAUGE**
Manufacturer:	MITUTOYO
Model No.:	3062S-19
Serial / Identification No.:	PJB 172
Capacity / Range:	0 ~ 100 mm
Resolution / Accuracy:	0.01 mm
Specification:	As per BS 907 (± 0.02 mm / 0.001 Inch)

Calibration Details:

Date of Receipt of Instrument:	28 September 2023
Calibration Date:	30 September 2023
Next Calibration Due Date:	30 March 2024
Location of Calibration:	At FSL Laboratory, Jeddah

Calibrated by:

FSL-W.P 4 TECH

Mustafa Kamal
Calibration Lab. Supervisor

05 October 2023
Date

Reviewed by:

For

Irshad Ahmed
Calibration Engineer

Approved by:

Sajith Paichadathil
Asst. Lab. Manager. Yanbu

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CERTIFICATE No.: SA17-9061-11999

RESULTS OF CALIBRATION OF DIAL GAUGE

Calibration Procedure:

Calibration Procedure:	FSL CP A 05
Reference Standard:	BS 907

Calibration Data:

Reference Standard Reading (mm)	Average Test Instruments Reading (DUC) (mm)	Difference
0	0.00	0.00
20	20.00	0.00
40	40.00	0.00
60	60.00	0.00
80	80.00	0.00
100	100.00	0.00
80	80.00	0.00
60	60.00	0.00
40	40.00	0.00
20	20.00	0.00
0	0.00	0.00

Measurement Uncertainty: The expanded uncertainty of the above measurement is estimated not to exceed **± 8.97 µm**, based on Type A and B Standard uncertainties multiplied by a coverage factor k=2, providing a level of confidence of approximately 95%.

Test Conditions:

Ambient Temperature:	24 °C
Relative Humidity:	58%

Details of Reference Device:

Reference Device (Description)	Standard Gauge Block
Manufacturer	Kudale Instruments.
Serial / Identification Number:	1202109 / FSL ID # 84-181
Next Calibration Due:	04 March 2025
Calibration Traceability:	Traceable to International Standards Report No: 2023001369

Calibration Lab. Supervisor: _____

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CERTIFICATE No.: SA17-9061-11996

CALIBRATION CERTIFICATE OF DIAL GAUGE

CLIENT: KASKTAS Arabia Co. **PROJECT No.:** SA17-9061

ADDRESS: Jeddah, Saudi Arabia **DATE:** 05 October 2023

CONTACT NO: 055 634 4475

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Details of Device under Calibration (DUC)

(Information supplied by the client)

Description:	**DIAL GAUGE**
Manufacturer:	MITUTOYO
Model No.:	3058S-19
Serial / Identification No.:	SKS 191
Capacity / Range:	0 ~ 50 mm
Resolution / Accuracy:	0.01 mm
Specification:	As per BS 907 (± 0.02 mm / 0.001 Inch)

Calibration Details:

Date of Receipt of Instrument:	28 September 2023
Calibration Date:	30 September 2023
Next Calibration Due Date:	30 March 2024
Location of Calibration:	At FSL Laboratory, Jeddah

Calibrated by:

FSL-W.P 4 TECH

Mustafa Kamal
Calibration Lab. Supervisor

05 October 2023
Date

Reviewed by:

For

Irshad Ahmed
Calibration Engineer

Approved by:

Sajith Paichadathil
Asst. Lab. Manager. Yanbu

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CERTIFICATE No.: SA17-9061-11996

RESULTS OF CALIBRATION OF DIAL GAUGE

Calibration Procedure:

Calibration Procedure:	FSL CP A 05
Reference Standard:	BS 907

Calibration Data:

Reference Standard Reading (mm)	Average Test Instruments Reading (DUC) (mm)	Difference
0	0.00	0.00
10	10.00	0.00
20	20.00	0.00
30	30.00	0.00
40	40.00	0.00
50	50.00	0.00
40	40.00	0.00
30	30.00	0.00
20	20.00	0.00
10	10.00	0.00
0	0.00	0.00

Measurement Uncertainty: The expanded uncertainty of the above measurement is estimated not to exceed **± 8.93 µm**, based on Type A and B Standard uncertainties multiplied by a coverage factor k=2, providing a level of confidence of approximately 95%.

Test Conditions:

Ambient Temperature:	24 °C
Relative Humidity:	58%

Details of Reference Device:

Reference Device (Description)	Standard Gauge Block
Manufacturer	Kudale Instruments.
Serial / Identification Number:	1202109 / FSL ID # 84-181
Next Calibration Due:	04 March 2025
Calibration Traceability:	Traceable to International Standards Report No: 2023001369

Calibration Lab. Supervisor: _____

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